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10/695,579

10/28/2003

Chan-Soo Hwang

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07/24/2007

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EXAMINER

ETTEHADIEH, ASLAN

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/695,579	Applicant(s) HWANG ET AL.	
	Examiner Aslan Ettehadieh	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments filed 07/05/2007 have been fully considered but they are not persuasive.
2. Applicant's arguments regarding claims 1 and 8, *112, second paragraph, rejection has sufficient antecedent basis in the claim*. Contrary to applicant's assertion, The preamble recites "information bit streams" and the claim recites "the modulated symbol streams" which is not equivalent. 112, second paragraph, rejection still stands.
3. Applicant's arguments regarding claims 1 and 8, *Shibutani does not disclose a sequence generator for generating a sequence for channel estimation*. Contrary to applicant's assertion, Shibutani discloses a sequence generator for generating a sequence for channel estimation (figure 3, paragraphs 6, 14, 43 – 46; where pilot symbols are supplied to a channel condition detector to measure a channel condition)
4. Applicant's arguments regarding claims 1 and 8, *Shibutani does not disclose transmitting the sequence in substitute for at least one modulation symbol in a predetermined position through the M transmission antennas, for each of the modulation symbol streams output from the M modulators*. Applicant has deleted this limitation from the claim.
5. Applicant's arguments regarding claims 1 and 8, *Shibutani does not disclose encoding bit streams with an STTC and transmitting a sequence for channel estimation*. In response to applicant's arguments, the recitation *encoding bit streams with an STTC and transmitting a sequence for channel estimation* has not been given patentable

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weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

### ***Information Disclosure Statement***

6. The information disclosure statement filed 04/09/2007 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. WO 02/45514 is not considered because applicant has not provided a copy for the application file.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 1 recites the limitation "the modulation symbol streams output". There is insufficient antecedent basis for this limitation in the claim. Does the applicant mean "the modulation bit streams output", "a modulation symbol streams output", or etc. Also, this causes an antecedent basis problem for the limitation of "the punctured modulation symbol".

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1 – 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 14 of copending Application No. 10/695493. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 – 14 of copending Application No. 10/695493 does not disclose a sequence generator for generating a pilot sequence for the channel estimation, however, it would have been obvious to one skilled in the art at the time of invention was made to have a sequence generator for generating a pilot sequence for the channel estimation in the filed of applicant's invention in order to maintain low error rate. The rejection of claim 1 is representative of claims 2 – 12.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 1 – 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 18 of copending Application No. 10/694197 in view of Walton et al. (US 2004/0156328). Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 – 18 of copending Application No. 10/695493 does not disclose a sequence generator for generating a pilot sequence for the channel estimation, however, it would have been obvious to one skilled in the art at the time of invention was made to have a sequence generator for generating a pilot sequence for the channel estimation in the filed of applicant's invention in order to maintain low error rate. Also, they are not patentably distinct from each other because claims 1 – 18 of copending Application No. 10/695493 does not disclose M multiplexers individually connected to the M transmission antennas, for multiplexing signals output from the M puncturers and the sequence inserted in the punctured modulation symbol, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to multiple transmitting paths, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. Walton discloses an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream (figure 8 elements 810x – 810y, 120x – 120y, figure 9 elements 920,

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924, 926, Pilot Symbols, paragraphs 106 – 116), where it would have been obvious to one skilled in the art at the time of invention was made to use an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream as taught by Walton to facilitate random access ability in the wireless system (paragraph 4). The rejection of claim 1 is representative of claims 2 – 12.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 – 5 and 8 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibutani (US 2003/0002518) in view of Ayman F. Naguib et al., "A Space-Time Coding Modem for High-Data-Rate Wireless Communications", IEEE Journal on Selected Areas in Communications", Vol. 16, No. 8, October 1998, pp. 1459-1478 (hereinafter Naguib).

11. Regarding claims 1 and 8, Shibutani discloses a method and an apparatus for transmitting a sequence for channel estimation in a mobile communication system including M transmission antennas, P encoders for receiving P information bit streams and encoding the received P information bit streams with a space-time trellis code (STTC), and M modulators for modulating information bit streams output from the P

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encoders in a predetermined modulation scheme and outputting modulation symbol streams, the apparatus comprising: a sequence generator for generating the sequence for the channel estimation (figure 3, paragraphs 6, 14, 43 – 46); M puncturers for puncturing at least one modulation symbol in a predetermined position for each of the modulation symbol streams output from the M modulators (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46); and M multiplexers individually connected to the M transmission antennas, for multiplexing signals output from the M puncturers and the sequence inserted in the punctured modulation symbol (figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46) and transmitting the non-punctured modulation symbol with the sequence in the time period in which the sequence is transmitted (figure 3, element pilot symbol, where the pilot symbol is the non-punctured modulation symbol, also the values of M and P are being interpreted as “0” and thus the limitation of transmitting the non-punctured modulation symbol with the sequence in the time period in which the sequence is transmitted can not necessary take place with no elements). Shibutani is not specific about inserting the sequence in at least on punctured modulation symbol (even though the interpretation of “0” elements also hold).

In the same field of endeavor, however, Naguib discloses inserting the sequence in at least on punctured modulation symbol (page 1460, col. 1, paragraph 1).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use inserting the sequence in at least on punctured modulation symbol as taught by Naguib in the system of Shibutani to use pilot sequences to



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estimate different fading channels, translation: channel estimation (page 1460, col. 1, paragraph 1).

12. Regarding claims 2 and 9, Shibutani further discloses wherein the M puncturers each have a same number of modulation symbols where the sequence is inserted, for the modulation symbol streams output from the M modulators (paragraphs 43 – 46).

13. Regarding claims 3 and 10, Shibutani further discloses wherein the M puncturers each periodically repeat a position where the sequence is inserted, for the modulation symbol streams output from the M modulators (paragraphs 43, 51).

14. Regarding claims 4 and 11, Shibutani further discloses wherein the sequence is a pilot sequence (paragraphs 6, 14, 43 – 46).

15. Claims 6 – 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibutani (US 2003/0002518) in view of Ayman F. Naguib et al., "A Space-Time Coding Modem for High-Data-Rate Wireless Communications", IEEE Journal on Selected Areas in Communications", Vol. 16, No. 8, October 1998, pp. 1459-1478 (hereinafter Naguib) in further view of Walton et al. (US 2004/0156328)

16. Regarding claims 6 – 7 and 12, Shibutani discloses a position where the sequence is inserted is determined according to a puncturing matrix P1 and the sequence is inserted in a position of an element "0." (figures 1 and 4, figure 3 elements 144, 146, 147, 148, paragraphs 6, 14, 43 – 46). Shibutani is not explicit about wherein if M is 2 and a number of symbols constituting the modulation symbol stream is 4, a puncturing matrix defined as a specific matrix.

In the same field of endeavor, however, Walton discloses an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream (figure 8 elements 810x – 810y, 120x – 120y, figure 9 elements 920, 924, 926, Pilot Symbols, paragraphs 106 – 116).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use an apparatus for transmitting where there are a plurality of processing streams that including a puncturer a modulating function (mapping) and then multiplexing pilot symbols with the punctured modulation stream as taught by Walton in the system of Shibutani to facilitate random access ability in the wireless system (paragraph 4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use any puncturing pattern. Applicant has not disclosed that the specific puncturing pattern provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any puncturing pattern.

Therefore, it would have been obvious to use any puncturing pattern to one of ordinary skill in this art to modify any puncturing pattern to the claimed puncturing pattern to provide proper, rate matching, rate to fit the physical channel.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aslan Ettehadieh  
Examiner  
Art Unit 2611

AE

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER